

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) EP 1 233 100 A1.

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.08.2002 Bulletin 2002/34

(51) Int Cl.7: D06F 39/12

(21) Application number: 01830053.3

(22) Date of filing: 26.01.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: Fumagalli, Silvano
20052 Monza (Mi) (IT)

(74) Representative: Mittler, Enrico
c/o Mittler & C. s.r.l.,
Viale Lombardia, 20
20131 Milano (IT)

(71) Applicant: CANDY S.p.A.
I-20052 Monza (Milano) (IT)

(54) Washing machine for household use with two compartments

(57) A household use washing machine is described comprising a washing tub (4) mounted inside a cabinet (1), a drum (8) containing the laundry to be washed that is mounted inside said washing tub (4). The washing machine comprises a top compartment (2) and a bottom

compartment (3). The top compartment (2) is suitable to contain the washing tub (4) and the bottom compartment (3) is openable from the outside. The bottom compartment (3) provides to raise the washing tub (4) in such a way so as to facilitate the loading and the unloading of laundry from the drum (8).

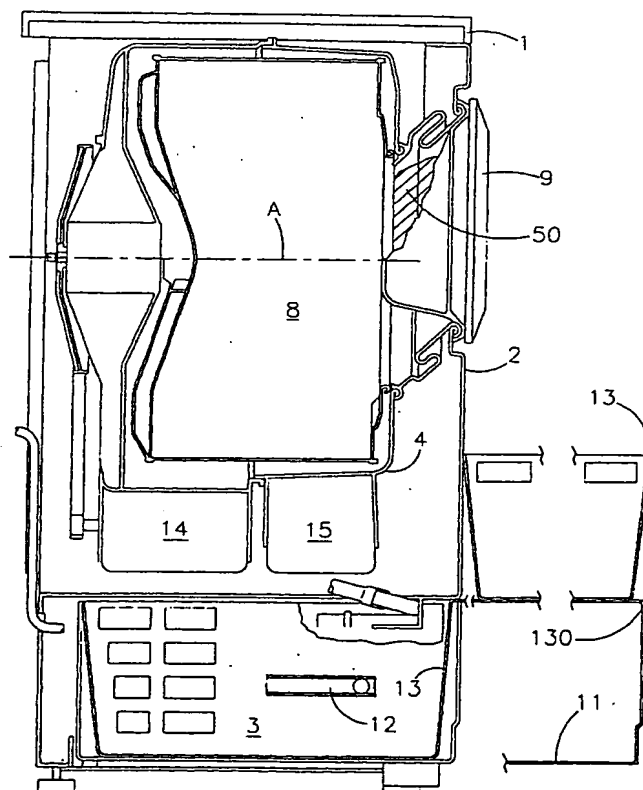


FIG. 1

Description

[0001] The present invention refers to a washing machine with two compartments, in particular to a front load washing machine for household use.

[0002] It is generally known that in modern front load washing-machines a drum suitable to contain the laundry to be washed is situated in a central position of the washing machine and it has an opening on the front of the machine. Such drum is revolvingly mounted into a container, called washing tub, that is destined to contain the washing water and equipped for the anchorage of suspension organs that allow it to remain suspended inside a cabinet containing the washing machine.

[0003] The loading of the drum forces an operator to continuous and sudden bending over for the positioning of the laundry to be washed inside the drum situated in a low position as regards the normal aptitudes of the operator.

[0004] In order to facilitate the loading of the laundry to be washed top load washing machines have been realised, that is in which the washing drum is provided with an opening on its top instead of the normal front opening.

[0005] In other cases washing machines have been realised in which the washing tub containing the drum is inclined at a certain angle as regards a horizontal axis in order to facilitate the loading of laundry to be washed.

[0006] In view of the state of the art herein described, scope of the present invention it is to realise a washing machine that allows an easier loading of the laundry to be washed.

[0007] According to the present invention, such scope is attained by means of a washing machine for household use comprising a washing tub mounted inside a cabinet, a drum containing the laundry to be washed mounted inside said washing tub, characterized in that it comprises a top compartment and a bottom compartment, said top compartment being suitable to contain said washing tub and said bottom compartment being openable from the outside, said bottom compartment providing to raise said washing tub in a such way so as to facilitate the loading and the unloading of the laundry from the drum.

[0008] Owing to the present invention it is possible to realise a washing machine that owing to a height greater than the known washing machines makes the operation of loading and unloading of the laundry to be washed easier.

[0009] The characteristics and the advantages of the present invention will become evident from the following detailed description of an embodiment thereof, that is illustrated as a non-limiting example in the enclosed drawings, in which:

Figure 1 is a schematic side view of a washing machine according to an embodiment of the present invention;

Figure 2 is a partially sectioned schematic front view of the washing machine in Figure 1;

Figure 3 is a schematic side view of a washing machine according to a variation of the embodiment of the present invention;

Figure 4 is a partially sectioned schematic front view of the washing machine in Figure 3.

[0010] With reference to Figures 1 and 2 a front load washing machine is shown that is provided with a cabinet 1 comprising two compartments: one top compartment 2 and one bottom compartment 3. In the top compartment 2 a washing tub 4 is housed that is suspended inside the cabinet 1 by means of organs of suspension 5 comprising suspension springs 6 and shock-absorbers 7. The suspension springs 6 connect the washing tub 4 to the top of the cabinet 1 while the shock-absorbers 7 connect the bottom part of the tub 4 with the bottom of the cabinet 1 and they are fastened to vertical projections 10 of the bottom of the cabinet 1. The pairs of springs 6 and shocks-absorber 7 are inclined in such a way that the distance between either the two springs 6 or the two shocks-absorber 7 is greater in the points in which they are connected with the top or the bottom (precisely to the projections 10) of the cabinet 1 as compared with the distance in the points in which they are connected with the tub 4. The washing tub 4 comprises a cylindrical drum 8 coaxial to it and destined to contain the laundry to be washed; said drum 8 is supported by the cabinet 1 in a revolving way around a horizontal axis A inside the washing tub 4. Drum 8 is closed by a window 9 that is hinged to the cabinet 1 of the washing machine; said window 9 is preferably provided with a fixed or removable detergent dispenser 50.

[0011] The bottom compartment 3 comprised between the shock-absorbers 7 is openable from the outside, and it households a trolley 11 that is sliding on lateral guides 12 and containing a container 13 suitable to contain the laundry to be washed or used as tools holder. Such container 13 has such dimensions that once it is extracted from the trolley 11, it can be placed on upper part 130 of same trolley 11 opened so as to facilitate the loading or unloading of the laundry.

[0012] The presence of the compartment 3 in the cabinet 1 determines a greater height of the washing machine shown in the annexed figures as compared with the known washing machines; in fact if the height of the known washing machines is around 80 cm, the washing machine according to the present invention has a height of approximately 120 cm. This allows an easier loading and unloading of the laundry from the drum 8 since the continuous bending over on behalf of a operator can be prevented.

[0013] The positioning of counter-weights 14, 15 is realised in such a way that the barycentre axis of the washing tub 4 is maintained inside the vertical projection of the same tub during the operation of the washing machine, especially during the centrifugal stage. For such

reason the positioning of the counter-weights is done under the washing tub 4 in a way symmetrical to the barycentre axis. By taking advantage also of the weight of a motor 16 serving for the rotation of drum 8, the positioning of the counter-weights can preferably be carried out by subdividing the load into three units; two equal units 14 are arranged on the back as regards the washing tub 4 and they are positioned at the sides of the motor 16; a unit 15 is arranged on the front as regards the washing tub 4 and it is facing the units 14 and the motor 16. If for instance it is necessary to utilise a total counter-weight of approximately 34 kg, an optimal subdivision of the load is obtained by using the unit 14 of approximately 4 kg and a unit 15 of 20 kg, by taking advantage of the fact that the weight of motor 16 is of approximately 6 kg.

[0014] In the washing machine shown in Figures 1 and 2, the filtering element 17 is arranged in a higher position as compared with the known washing machines; this allows an easier operation of cleaning or of substitution of the filtering cartridge and it allows to contain the volume of inert water.

[0015] In Figures 3 and 4 a washing machine according to a variation of the aforementioned embodiment is shown. The washing machine of such variation shows, in a different way, a washing tub 4 with axis B inclined by 8° or 12° as regards the horizontal axis A (the inclination is measured in counter-clockwise direction), with a different positioning of the counter-weights and a different positioning of the suspension organs of the washing tub.

[0016] Such washing tub 4 is provided both at its top as well as at its bottom with pairs of shock-absorbers 18 that are suitable to keep it suspended inside the cabinet 1 and to limit its oscillations during the operation of the washing machine. The shock-absorbers are mounted onto the tub 4 in points belonging to a vertical plane perpendicular to the horizontal axis A and passing through the theoretical barycentre of the tub 4 and of the drum 8. The pairs of top and bottom shock-absorbers 18 are inclined in such a way that the distance between the two is greater in the points in which they are connected with the bottom (precisely with the projections 10) or with the top of cabinet 1 as compared with the distance in the points in which they are connected with the tub 4.

[0017] The positioning of the counter-weights 24, 25 is realised in such a way that the barycentre axis of the washing tub 4 is maintained inside the vertical projection of the same tub during the operation of the washing machine, especially during the centrifugal stage. For such reason the positioning of the counter-weights is done under the washing tub 4 in symmetrical way to the barycentre axis. By taking advantage also of the weight of a motor 26 suitable to the rotation of the drum 8, the positioning of the counter-weights can preferably be done by subdividing the load into three units, as already mentioned for the washing machine with horizontal axis tub, but with a different loads distribution. Two equal

units 24 are arranged on the back of the washing tub 4 and they are arranged at the sides of the motor 26; a unit 25 is arranged on the front as regards the washing tub 4 and it is facing the units 24 and the motor 26. If as an example it is necessary to use a total counter-weight of approximately 34 kg, an optimal subdivision of such load is obtained by using the unit 24 of approximately 8 kg and a unit 25 of 12 kg by taking advantage of the fact that the weight of the motor 26 is of approximately 6 kg.

Claims

1. Household use washing machine comprising a washing tub (4) mounted inside a cabinet (1), a drum (8) containing the laundry to be washed mounted inside said washing tub (4), **characterized in that** it comprises a top compartment (2) and a bottom compartment (3), said top compartment (2) being suitable to contain said washing tub (4) and said bottom compartment (3) being openable from the outside, said bottom compartment (3) providing to raise said washing tub (4) in such a way so as to facilitate the loading and the unloading of laundry from the drum (8).
2. Washing machine according to claim 1, **characterized in that** said cabinet (1) has a height of approximately 120 cm.
3. Washing machine according to claim 1, **characterized in that** said bottom compartment (3) comprises a container (13) suitable to contain laundry or various tools.
4. Washing machine according to claim 1, **characterized in that** it comprises a system of counter-weights (14, 15; 24, 25) in order to balance said washing machine during its operation, said counter-weights (14, 15; 24, 25) being positioned under said washing tub.
5. Washing machine according to claim 1, **characterized in that** said washing tub (4) is at a horizontal axis (A).
6. Washing machine according to claim 1, **characterized in that** said washing tub (4) is at an inclined axis (B).
7. Washing machine according to claim 1, **characterized in that** said drum (8) is closed by a window (9), said window (9) being provided with a fixed or removable detergent dispenser (50).

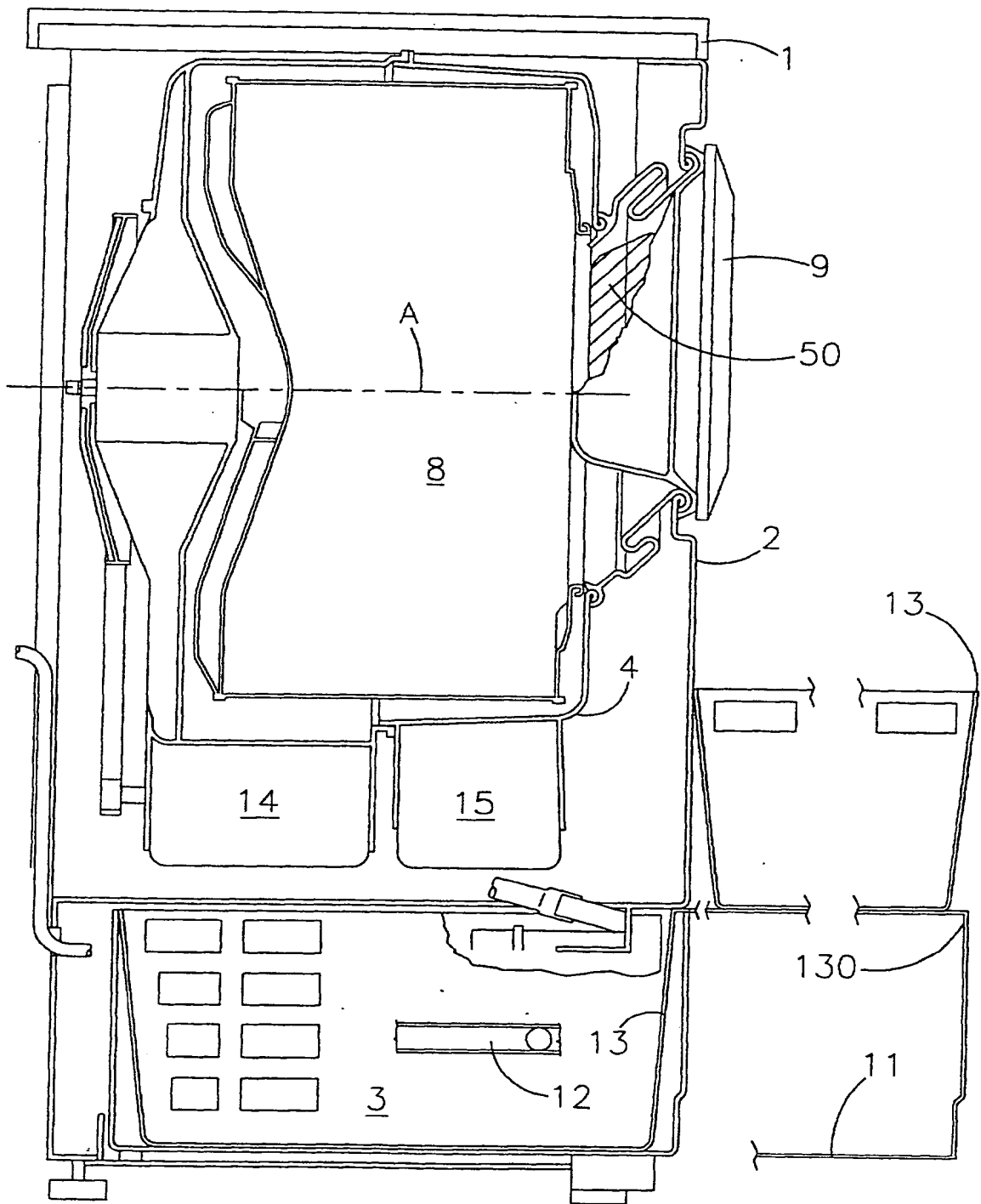
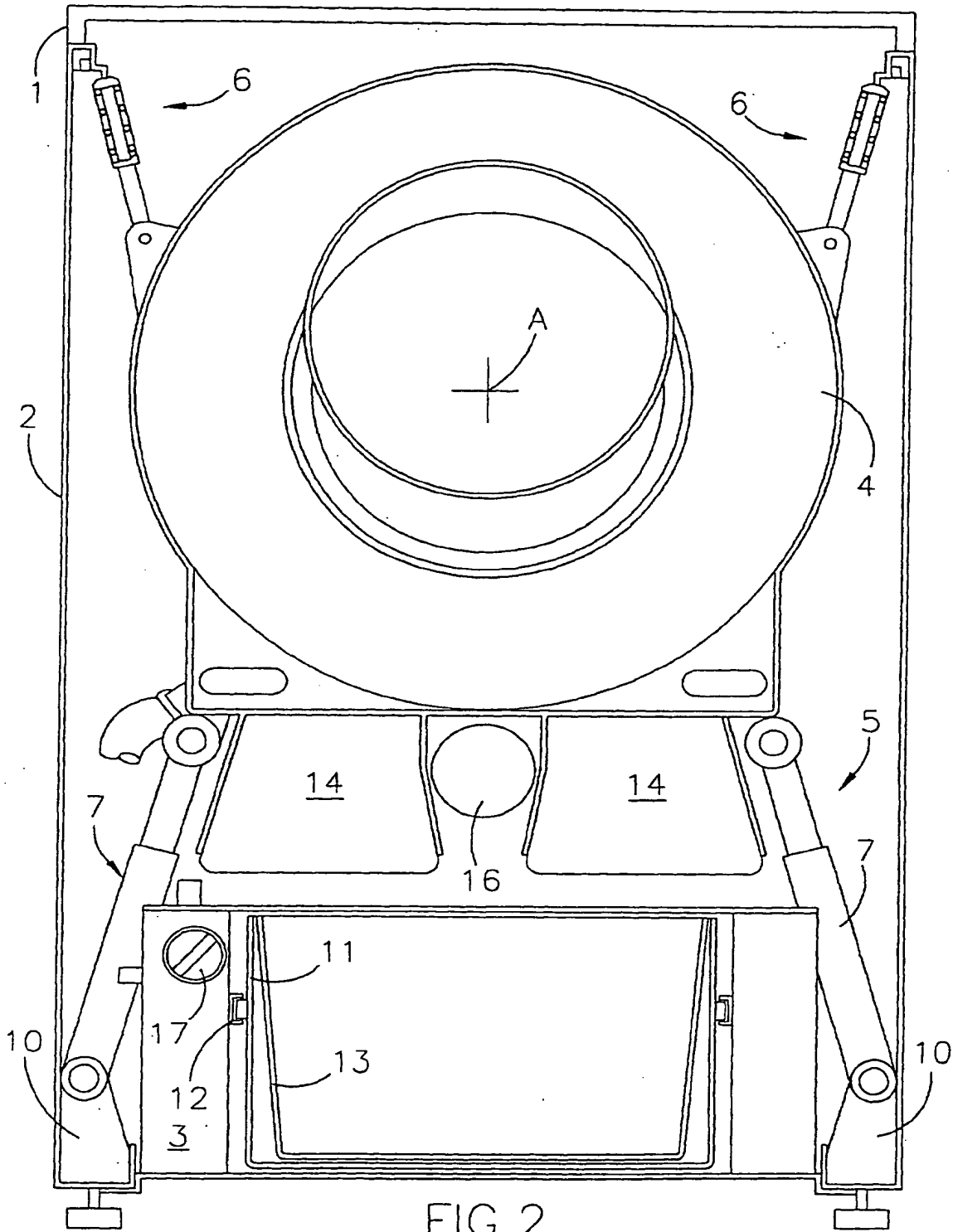


FIG. 1



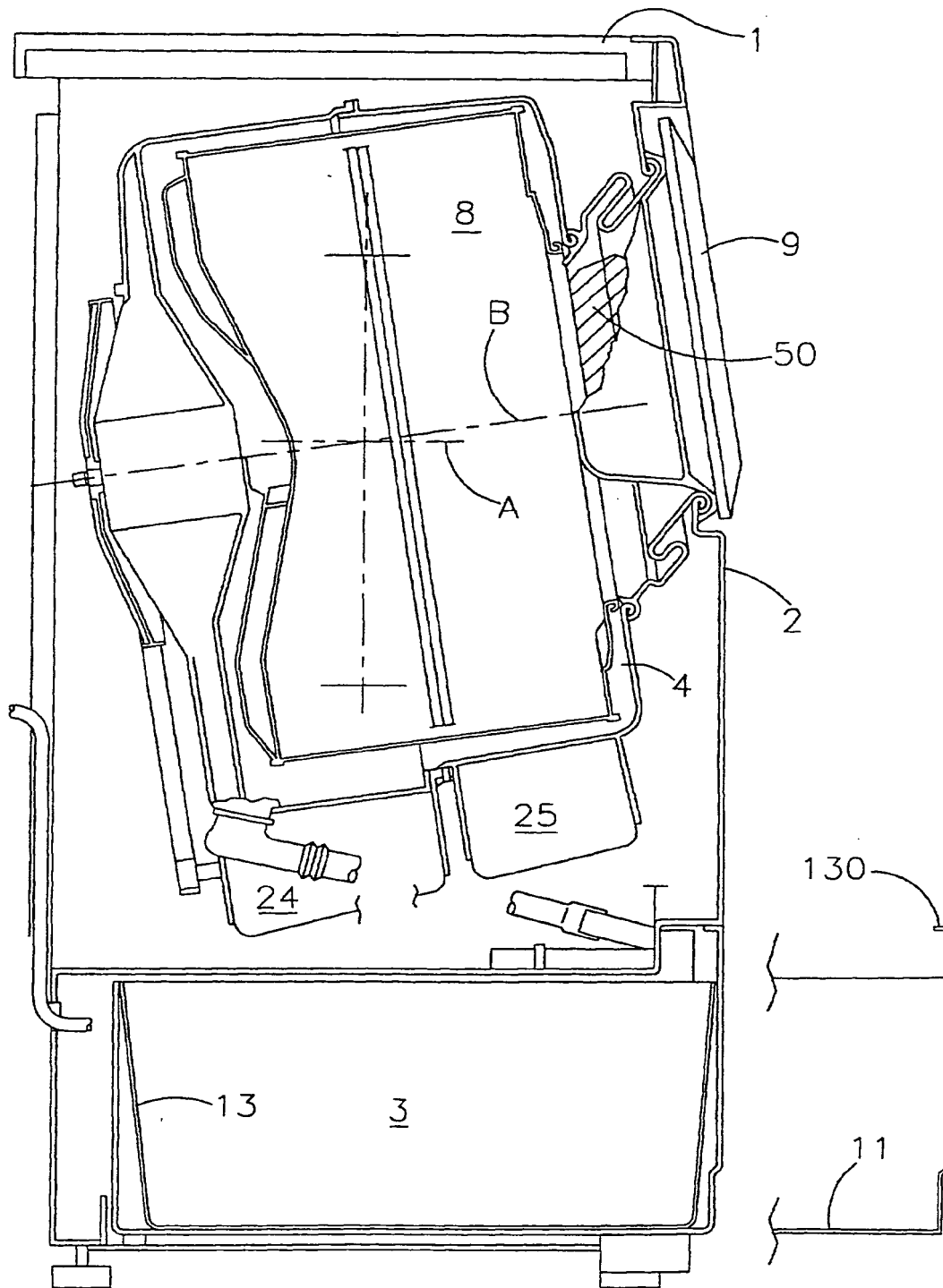
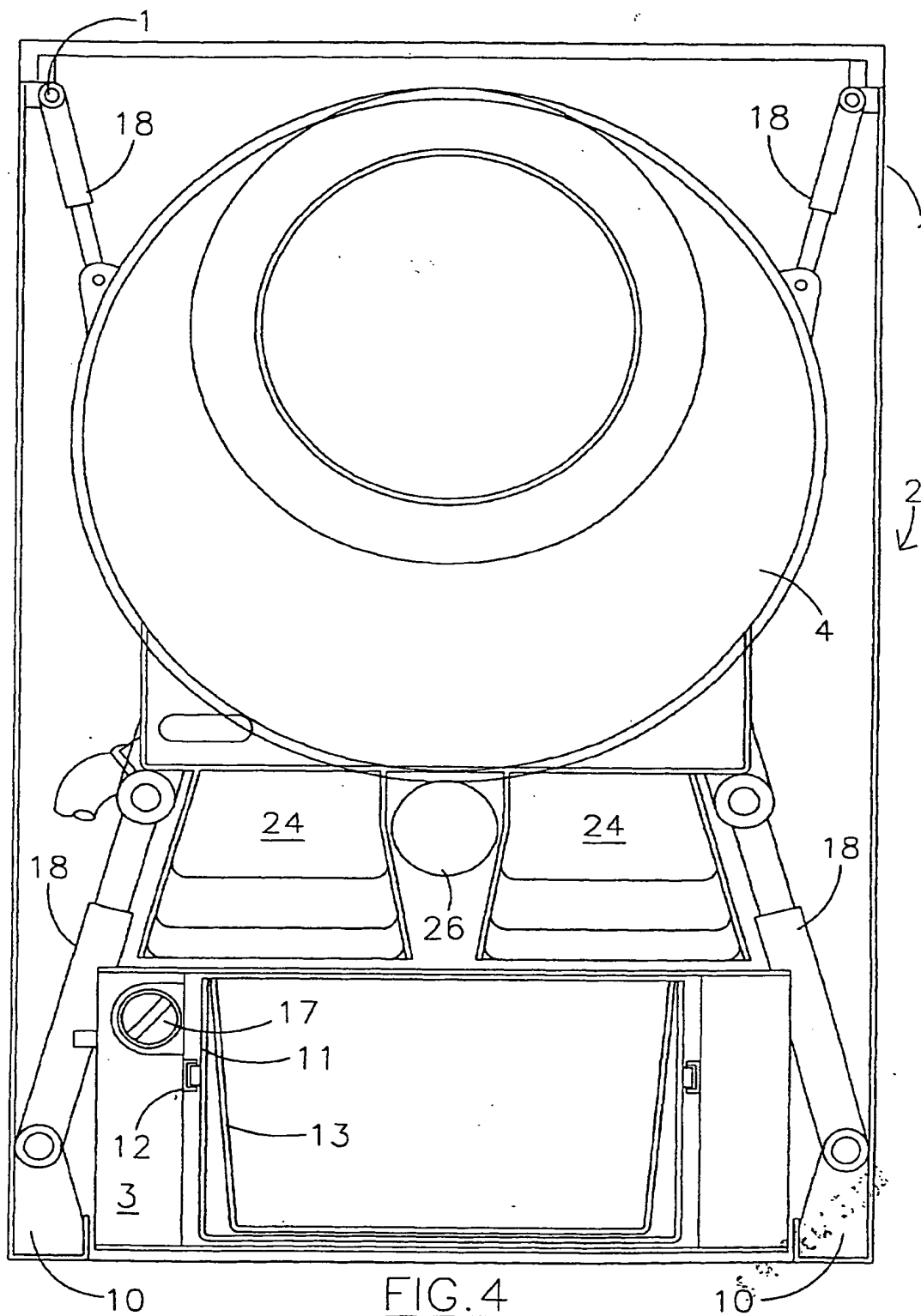


FIG. 3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0053

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 42 28 469 A (DREHER JUERGEN) 13 May 1993 (1993-05-13)	1-3,5,7	D06F39/12
Y	* claims 1-3; figure 1 *	4,6	
X	DE 32 13 420 A (LEPPER WILHELM DR ING) 13 October 1983 (1983-10-13)	1,3	
A	* claims 1,2,8; figure B *	2,5	
X	US 2 786 730 A (THURSTON CHARLES E) 26 March 1957 (1957-03-26)	1,3	
Y	GB 2 294 952 A (ELECTROLUX ZANUSSI ELETTRODOME) 15 May 1996 (1996-05-15)	4	
Y	FR 2 736 942 A (CIAPEM) 24 January 1997 (1997-01-24)	6	
	* page 1, line 28 - page 2, line 18; figure 1 *		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			D06F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 December 2001	Examiner D'Souza, J
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure I : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03 92 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 83 0053

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-12-2001

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 4228469	A	13-05-1993	DE	9113852 U1	02-01-1992
			DE	4228469 A1	13-05-1993
DE 3213420	A	13-10-1983	DE	3213420 A1	13-10-1983
US 2786730	A	26-03-1957	NONE		
GB 2294952	A	15-05-1996	IT	1267595 B1	07-02-1997
			DE	29516884 U1	04-01-1996
			ES	1032374 U1	16-04-1996
			FR	2726584 A1	10-05-1996
FR 2736942	A	24-01-1997	FR	2736942 A1	24-01-1997
			IT	T0960439 A1	24-11-1997

THIS PAGE BLANK (USPTO)